REMARKS/ARGUMENTS

This Amendment is in response to the Office Action dated June 19, 2003. Claims 1-10 are pending in the present application. Claims 1-10 have been rejected. Claims 1 and 6 have been amended to further define the scope and novelty of the present invention, for clarification, as well as to correct typographical and grammatical errors. Support for the amendments is found throughout the specification, and in particular, in Figure 6 and on page 6, line 21, to page 7, line 6. Applicants respectfully submit that no new matter has been presented. Accordingly, claims 1-10 are pending. For the reasons set forth more fully below, Applicants respectfully submit that the claims as presented are allowable. Consequently, reconsideration, allowance, and passage to issue are respectfully requested.

Applicants have included a Petition for Extension of Time to extend the deadline for filing a response by one (1) month, from September 19, 2003 to October 20, 2003.

Claim Rejections - 35 U.S.C. §103

The Examiner has stated:

> Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent NO. 6,289,391 to Smith in view of U.S. Patent NO. 5,710,923 to Jennings.
> As to claim 1, Smith teaches remote procedure calls (external procedure calls; column 5, lines 23-30) in a multiprocessing system, ... general purpose processor ... (Client CPU and at least one Server CPU; column 2, lines 49-52); ...
> (a) accessing a reserved address (SIRW, stuffed indirect reference word, column 8 , lines 23-41; stores an SIRW to the event in a global MCP Operating System array; column 9, lines 1-5) in at least one of the network processors; and
> (b) initiating ... (SIRW is an MCP-specific hardware construct used as an indirection to reference another location...SIRW can be thought of as a jump table...indexing the jump table allows reference to a specific MCP Server function; column 8, lines 32-41).
> Although Smith shows substantial features of the claimed invention, he does not explicitly show pointing to an address within the memory in a second portion of the reserved address.

However, Jennings teaches remote procedure calls... (active messaging...) and pointing... (Local parameters pointer 16e, Fig. 5; column 5, lines 15-18) in a second portion (uLP) of the reserved address (uthread descriptor; column 6, lines 6-20), ... column 6, lines 20-25).

It would have been obvious to a person of ordinary skill in the art at the time the invention to apply the teaching of pointing to an address within the memory in a second portion of the reserved address as taught by Jennings...(column 5, lines 18-23 of Jennings). Obviously, the pointer to the function and the pointer to the parameters would be stored together at one location because this would simplify access to a function and its parameters.

Applicants respectfully traverse the Examiner's rejections. For the Examiner's convenience, amended independent claims 1 and 6 are reproduced in their entirety herein below.

Claims 1 and 6

1.   (currently amended) A method for providing remote procedure calls in a multiprocessing system, the multiprocessing system including a general purpose processor and a plurality of network processors; each of the plurality of network processors having a memory, the method comprising the steps of:

(a) accessing a reserved address in the memory of at least one of the plurality of network processors, wherein the reserved address comprises a first portion and a second portion, wherein the reserved address is known to a remote procedure call requestor, wherein the second portion comprises a pointer for an instruction address of a procedure code, wherein the instruction address is not known to the remote procedure call requestor;

(b) initiating a software action by the first portion of the reserved address, wherein the software action comprises obtaining the pointer in the second portion of the reserved address; and

(c) accessing and processing the procedure code at the instruction address utilizing the pointer.

6.   (original) A system for providing remote procedure calls in a multiprocessing system, the multiprocessing system including a general purpose processor and a plurality of network processors; each of the plurality of network processors having a memory, the system comprising:

means for accessing a reserved address in the memory of at least one of the plurality of network processors, wherein the reserved address comprises a first portion and a second portion, wherein the reserved address is known to a remote procedure call requestor, wherein the second portion comprises a pointer for an instruction address of a procedure code, wherein the instruction address is not known to the remote procedure call requestor;

means for initiating a software action by the first portion of the reserved address, wherein the software action comprises obtaining the pointer in the second portion of the reserved address; and

means for accessing and processing the procedure code at the instruction address utilizing the pointer.

The present invention provides a method for providing remote procedure calls in a multiprocessing system including a general purpose processor and a plurality of network processors. Each of the plurality of network processors has a memory. The method comprises accessing a reserved address in the memory of at least one of the plurality of network processors, where the reserved address comprises a first portion and a second portion. The reserved address is known to a remote procedure call requestor. The second portion comprises a pointer for an instruction address of a procedure code, and the instruction address is not known to the remote procedure call requestor. The method further comprises initiating a software action by the first portion of the reserved address, where the software action comprises the step of obtaining the pointer in the second portion of the reserved address. The method further comprises accessing and processing the procedure code at the instruction address utilizing the pointer. (Summary and Figure 6 and on page 6, line 21, to page 7, line 6.) Smith in view of Jennings does not teach or suggest these features, as discussed below.

Smith discloses a method and system for performing external procedure calls from a server program to a client program while both programs are running in a heterogeneous computer system. The client and server programs are both stored in a common memory. The server program makes procedure calls to the client program and the client program returns results of the procedure calls to the server program. The server program makes an external procedure call using a stuffed indirect reference word (SIRW), which functions as jump table to reference the location of the client function in the common memory. (Abstract and column 8, lines 28-41.)

However, Smith does not teach or suggest the reserved address "wherein the second portion comprises a pointer for an instruction address of a procedure code, wherein the

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instruction address is **not known to the remote procedure call requestor**," as recited in

amended independent claims 1 and 6. Instead, Smith teaches an SIRW (**jump table**) where the

instruction address is **known to the server program** making an external procedure call. The

jump table of Smith is different from the reserved address of the present invention, because the

jump table is used by the server program to reference or know the instruction address of the

client function in the common memory (column 8, lines 28-41.) In contrast to the jump table of

Smith, the reserved address of the present invention enables a requestor to access and process a

procedure remotely without having to know the instruction address. The requestor only needs to

know and access the reserved address to initiate the software action. The pointer for the

instruction address in the second portion of the reserved address is then used to access the

procedure code. Accordingly, the reserved address of the present invention eliminates the need

for a jump table to provide the instruction address for the procedure code to the requestor. This

is beneficial because a jump table requires pre-allocated memory space and other resources to

regularly update the jump table's index (specification, page 1, line 18, to page 2, line 3). Since

Smith uses a jump table, Smith cannot provide this benefit as with the present invention.

Therefore, Smith does not teach or suggest the present invention as recited in amended

independent claims 1 and 6.

Jennings discloses a method for communicating active messages among nodes of a

parallel processing computer system. The active messages are defined by μthreads, and the

method includes the step of generating a μthread having an instruction pointer, a frame pointer,

and a local parameters pointer from a first node to a second node. The method also includes the

step of performing a procedure on a data structure in accordance with the μthread. The

instruction pointer points to an application specific procedure in system memory, and the frame

pointer points to an application specific data structure in system memory. The local parameters pointer points to one or more words of additional data or parameters stored in memory mapped device registers or system memory. (Abstract, Figures 5 and 6, and column 5, lines 12-22.)

Like Smith, Jennings also does not teach or suggest the reserved address "wherein the second portion comprises a pointer for an instruction address of a procedure code, wherein the instruction address is not known to the remote procedure call requestor," as recited in amended independent claims 1 and 6. Instead, Jennings teaches that the location of an application specific procedure is **known to the sender** of an active message. Referring to Figures 5 and 6 of Jennings, the active message sent by the sender includes an instruction pointer that identifies the location or instruction address of an application specific procedure in the system memory (see also column 5, lines 12-22). Accordingly, the sender of the message knows the location of the procedure in order to include the pointer in the message. In contrast to the instruction pointer in the message of Jennings, the pointer for the instruction address in the reserved address of the present invention is not known to the remote procedure call requestor. Therefore, Jennings does not teach or suggest the present invention as recited in amended independent claims 1 and 6.

Accordingly, Smith in view of Jennings does not teach or suggest the *combination of steps* as recited in amended independent claims 1 and 6, and these claims are allowable over Smith in view of Jennings.

Remaining dependent claims

Dependent claims 2-5 and 7-10 depend from claims 1 and 6, respectively. Accordingly, the above-articulated arguments related to claims 1 and 6 apply with equal force to

claims 2-5 and 7-10, which are thus allowable over the cited references for at least the same reasons as claims 1 and 6.
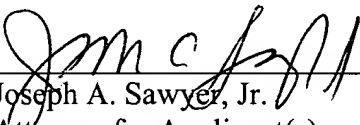
Conclusion

In view of the foregoing, Applicants submit that claims 1-10 are patentable over the cited references. Applicants, therefore, respectfully request reconsideration and allowance of the claims as now presented.

Applicants' attorney believes that this application is in condition for allowance. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,

SAWYER LAW GROUP LLP

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Date

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